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U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Interagency Working Group on the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act.

AGENCY: National Ocean Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

ACTION: Notices; publication of report and plan summary.

SUMMARY: The National Ocean Service (NOS) of the National Oceanic and Atmospheric Administration (NOAA) publishes this notice to announce the publication of a detailed outline summarizing the intent of the Great Lakes Plan on Harmful Algal Blooms (HABs) and Hypoxia. Notice is also hereby given of the publication of "HABs and Hypoxia Comprehensive Research Plan and Action Strategy: An Interagency Report."

FOR FURTHER INFORMATION, CONTACT: Caitlin Gould (Caitlin.gould@noaa.gov, 240-533-0290) or Stacey DeGrasse (Stacey.Degrasse@fda.hhs.gov, 240-402-1470)

SUPPLEMENTARY INFORMATION:

I. Background

HABS and hypoxia can have detrimental impacts to human and animal health, local and regional economies, and long-term national security. In response, the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2014 (HABHRCA) establishes a national program and Federal interagency task force to advance the understanding of HABs and hypoxia events,

and to respond to, detect, predict, control, and mitigate these events to the greatest extent practicable.

Section 8 of the HABHRCA requires NOAA, as the lead federal agency of the task force and Interagency Working Group on HABHRCA (IWG-HABHRCA), to develop and submit to Congress a plan for reducing, mitigating, and controlling HABs and hypoxia in the Great Lakes, and publish a summary of the plan in the Federal Register prior to submission. The plan builds upon the Great Lakes HABs and Hypoxia Integrated Assessment contained in "HABs and Hypoxia Comprehensive Research Plan and Action Strategy: An Interagency Report", referenced herein, and builds upon the work of the International Joint Commission (e.g., reports entitled *A Balanced Diet for Lake Erie: Reducing Phosphorous Loadings and Harmful Algal Blooms* and *Human Health Effects from Harmful Algal Blooms: a Synthesis*) and the Great Lakes Water Quality Agreement (e.g. Annex Four). The Plan also addresses key aspects of Federal Activities to better understand and address HABs and hypoxia in the Great Lakes. Those efforts include establishing HAB and hypoxia forecast products through comprehensive monitoring integrated with satellite coverage and modeling of coastal, and freshwater zones; and developing and deploying lower cost, easy to use, and real-time sensors for early detection of hypoxia and HAB cells and toxins. The Plan further reflects significant engagement between IWG-HABHRCA agencies and a wide variety of stakeholders. Stakeholder engagement provides the IWG with information and perspective that enhances Federal data collection efforts.

II. Summary of the Great Lakes Plan on Harmful Blooms and Hypoxia

The IWG-HABHRCA is producing the *Great Lakes Plan on Harmful Algal Blooms and Hypoxia: An Interagency Report* (hereafter: the "Plan"), which will assess the current state of the science on causes and impacts of harmful algal blooms (HABs) and hypoxia in the Great Lakes, highlight progress to date and current challenges, and propose next actions.

An overview of the current state of science in the Plan will discuss challenges and recommendations related to HABs and hypoxia, addressing improving scientific understanding; prediction, modeling, and monitoring; mitigating the causes and impacts; social science; and engagement, communications, and outreach. Throughout, the report will consider prevention, control, and mitigation as related to HABs and hypoxia in the region. It will also discuss Federal progress and successes.

Scientific Understanding: Requirements for Understanding, Verifying, and Characterizing HABs and Hypoxia

The section on improving scientific understanding will synthesize existing knowledge regarding bloom toxicity and the detection and mapping of HAB and hypoxia extent. It also will review causes of HABs and hypoxia, including the role of phosphorus and nitrogen, invasive species, herbicides, climate change, and other environmental drivers, as well as how these factors influence the duration and intensity of HAB and hypoxia events. It also will review questions related to the timing of events and causes of HAB toxicity.

Monitoring

Expanded and coordinated monitoring and data aggregation efforts, as well as advances in monitoring technologies, can help answer pressing questions at a variety of spatial and temporal scales. The report will discuss how scientific understanding and nutrient mitigation strategies for HABs and hypoxia can be improved with additional environmental monitoring. It also will discuss how partnerships between agencies and non-Federal groups play a role in enhancing the efficiency of monitoring efforts.

Modeling

The prediction and modeling section will discuss the methods and technology that are being developed to provide advanced warnings of HAB and hypoxic events, forecast recovery efforts related to nutrient abatement, and raise awareness of HABs and hypoxia in order to reduce risk to public health. Methods and technology discussed in the report will include data, calibration, and validation needs related to HAB and hypoxia models.

Impacts and Assessments

Mitigating the causes and impacts of HABs and hypoxia will encompass best management practices (BMPs) for addressing HABs and hypoxia, as well as BMPs during HAB and hypoxic events to minimize potential human health and socioeconomic risk. Mitigation challenges will include, but are not limited to, implementing new programs that reduce nutrient inputs, along with monitoring and modeling to determine BMP effectiveness.

Sections discussing challenges related to socioeconomics, engagement, communications, and outreach of these issues in the region will include information on health impacts for humans, the aquatic ecosystem, pets, and wildlife, as well as information on cost-benefit analyses, valuation of ecosystem services, and risk assessment. It will also discuss how to better communicate between Federal agencies and with non-Federal stakeholders.

Timeline and Budget

Recommendations for actions in each of the themes will be included in the report. The specific timeline and budgetary requirements for the deployment of future assets are subject to the availability of appropriations.

This report will consider HAB and hypoxic events that occur throughout the Great Lakes, such as those in Lake Erie's western basin and Sandusky Bay, Lake Huron's Saginaw Bay, and Lake Michigan's Green Bay. Stakeholder engagement and consultation will play a significant role in informing the content of the report; the IWG is soliciting input from academics, agricultural interests, industry, state and international agencies, and other stakeholder groups. To ensure that the Plan is technically sound and cost-effective, interagency collaborations and other partnerships will be identified as possible opportunities for leveraging resources, including areas of expertise, workforce, funding, or equipment. The Plan will refer to existing reports for information, such as the International Joint Commission's *A Balanced Diet for Lake Erie: Reducing Phosphorous Loadings and Harmful Algal Blooms*, and Annex Four of the Great Lakes Water Quality Agreement. The Plan will expand upon relevant topics as they relate to current challenges and recommendations for future efforts.

OTHER INFORMATION

The IWG-HABHRCA is comprised of representatives from NOAA, United States Environmental Protection Agency (USEPA), Food and Drug Administration (FDA), United States Department of Agriculture (USDA), United States Geological Survey (USGS), National Aeronautics and Space Administration (NASA), United States Navy, National Institute of Environmental Health Sciences (NIEHS), National Science Foundation (NSF), United States Food and Drug Administration (FDA), National Park Service (NPS), Centers for Disease Control and Prevention (CDC), National Aeronautics and Space Administration (NASA), United States Corps of Engineers (USACE), and the Bureau of Ocean Energy Management (BOEM).

OTHER INFORMATION:

Stakeholders are invited to submit questions and provide input related to concerns and successes pertaining to HABs and hypoxia in the Great Lakes region. The IWG-HABHRCA continues to seek general and technical feedback on topics including:

- Regional, Great Lakes-specific priorities for:
    - Ecological, economic, and social research on the causes and impacts of HABs and hypoxia;
    - Approaches to improving monitoring and early warnings, scientific understanding, prediction and modeling, and socioeconomics of these events; and
    - Mitigating the causes and impacts of HABs and hypoxia.
- Communication and information dissemination methods that state, tribal, local, and international governments and organizations may undertake to educate and inform the

public concerning HABs and hypoxia in the Great Lakes; and

- Perceived needs for handling Great Lakes HAB and hypoxia events, as well as an action strategy for managing future situations.

Inquiries and comments may be submitted via e-mail (IWG-HABHRCA@noaa.gov) or via U.S. mail to Caitlin Gould at NOAA, National Centers for Coastal Ocean Science, SSMC-4, #8237, 1305 East-West Highway, Silver Spring, MD 20910. Technical feedback in the form of brief annotated bibliographic entries would be welcome. The Interagency Working Group will gladly accept public input at any time; however, only those that are received on or before May 15, 2016, will be considered when the Interagency Working Group finalizes the plan.

OTHER INFORMATION

Paperwork Reduction Act: Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection displays a currently valid OMB Control Number.

Dated:_May 26, 2016_____

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Mary C. Erickson, Director, National Centers for Coastal Ocean Science

National Ocean Service

National Oceanic and Atmospheric Administration

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